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A COLLECTION OF BIRDS FROM CANA, DARIEN

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No. 8.— *A Collection of Birds from Cana, Darien*

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It will not have been forgotten that in 1912 Major E. A. Goldman collected extensively in eastern Panama in various parts of the Rio Tuyra basin and, using Cana as a base, successfully ascended Mt. Pirri, and maintained a camp in the cloud forest for several weeks. Most unfortunately this collection has never been reported upon, but a remarkable number of new genera, species and subspecies were described by Dr. Nelson, unquestionably constituting the richest haul of novelties ever made by a single expedition anywhere in Central America in modern times. Three years later the American Museum collectors, Anthony, Richardson and Ball, made extensive collections in the Tuyra valley, and succeeded in reaching the subtropical zone on Mt. Tacarcuna, well to the north of Mt. Pirri. Here other novelties were secured, as well as some of the specialties of Mt. Pirri, but a rather surprising number of the latter were not found. The marked differences in the avifauna of the two mountains, and the absence from both collections of many subtropical genera common to South and Central America is evidence to my way of thinking that the surface has been scratched only and that this zone in eastern Panama will repay investigation for years to come. The situation has been exactly the same in the tropical zone, as two recent expeditions have brought back birds new to science and others new to Panama, in spite of the thousands of specimens brought back from the same general region by some of the most competent collectors in the world. Major Goldman's comment (*Mammals of Panama*, p. 14) that the fauna of the region, especially the birds, seemed inexhaustible, has been amply justified.

The collection of birds reported in this article was made in the spring and summer of 1928 by Mr. Rex R. Benson, who has been working in various parts of Panama, with conspicuous success, in the interests of the American Museum of Natural History. The reopening of the historic gold mines at Cana, which were abandoned shortly after Goldman's visit, made a trip to the Mt. Pirri district possible for the first time in years. Dr. Chapman's interest being primarily the cloud forest birds, he agreed to let this Museum buy the other collections and with unexampled generosity permitted us to describe and keep any novelties or rarities they might contain. Our best thanks are therefore due him, and to Dr. Barbour for purchasing it. I greatly appreciate the

constant advice and helpful assistance from both Messrs. Bangs and Peters of the Department of Birds while preparing this report.

The collection numbers 618 specimens, which refer to 193 species, thanks to Mr. Benson's selective ability. Only three localities are represented, and they are all well known. El Real and Cupe are in the Rio Tuyra valley, and Cana is in the foothills of Mt. Pirri above the valley, at an altitude of 2,000 ft. No specimen was taken at a higher altitude than 2,700 ft., and consequently a very small percentage of subtropical species is included, chiefly scattering individuals of birds, which descend to lower levels in the non-breeding season. Nevertheless fifteen forms are described as new, and over thirty are recorded from Panama for the first time, including several subtropical zone genera, previously unknown between western Panama and Colombia. I do not doubt that a third collection made at Cana sometime in the future will show exactly similar results. As a matter of record, all species secured are listed, including those whose occurrence in the region has no special significance.

TINAMUS MAJOR SATURATUS, subsp. nov.

Type.—No. 140,451, M.C.Z.; breeding ♂; Cana, eastern Panama (alt. 2,200 ft.); April 18, 1928, Rex R. Benson.

Characters.—Most closely resembling *T. m. ruficeps* Selater and Salvin of eastern Ecuador in the general darkness of coloration both above and below and the heavy barring above, but crown darker chestnut, finely barred with blackish, ear-coverts much paler ochraceous, occipital crest well developed, and browner rather than grayer below.

Remarks.—The puzzling variations of these large Tinamous have long been a bane to systematic workers, and it is doubtful if enough material exists as yet to enable us to discriminate accurately between variations which are truly geographic and those which are due to age, sex or even dimorphism. Dr. Chapman made the most notable contribution on this subject in his revision of the group in 1917 (*Birds of Colombia*, pp. 187–190), a treatment which has been followed by nearly everyone since.

The last ten years have seen a great increase of material, not only in specimens, but also in the completeness of their geographical distribution, and most of it, at one time or another, I have been able to examine in various eastern museums. As Salvin and Godman pointed out years ago, definite signs of immaturity are the ochraceous spots on the wings and the obscure buffy barring on the chest. It would seem also that

older birds tend to have less black barring above than younger, but this does not mean that the variation in this barring is not also a geographic character in series. Apparently independent of age, sex or season, there are two color phases, which are evident in all good series, some birds having a more olive cast above, while others will be more reddish brown. Apparently also, while the color of the crown is undoubtedly a subspecific character, it is impugned by the dusky obscurations on the tips of the feathers in younger birds. Thus the red-headed races will have sooty foreheads or crowns in one state of plumage, when they will closely resemble in this respect some specimens of races which never have rufous crowns.

Turning now to a review of the Central American forms, Dr. Chapman was unquestionably correct in regarding them as races of *Tinamus major*, but he did not have available at that time topotypical material of any of the three proposed species or forms, and he was further handicapped in that the principal character of *T. fuscipennis* of Costa Rica was entirely imaginary. This, according to Salvadori, was the blackish instead of brownish primaries of *T. robustus*, which, as Carriker suspected and Kennard and Peters have recently stated, is purely a matter of the relative freshness of the plumage. Comparison of over thirty specimens of *T. robustus* with an equal number of *T. fuscipennis* shows that the former is much grayer above and less reddish on the abdomen. The two races intergrade in Honduras and Nicaragua. Two specimens in the American Museum of Natural History from the high mountain forests of San Rafael del Norte in northern Nicaragua agree with Mexican and Guatemalan specimens and consequently represent the southern known limit of *T. m. robustus*. In the lowland rain forest, however, *T. m. fuscipennis* or birds which are nearer this form than *robustus* occur throughout eastern Nicaragua.

Southward in Central America the situation becomes more complicated. In southwest Costa Rica and Chiriqui (Pacific slope) a red-headed Tinamou appears, described as *T. castaneiceps* by Salvadori, and Dr. Chapman extended its range to include the whole of Panama and parts of Colombia, without, however, having seen topotypical material. Salvadori in the Catalogue of Birds, 27, p. 501, however, recorded *T. fuscipennis* from "Veragua" (an Arcé specimen), supposedly in the range of *T. castaneiceps*, and Dr. Chapman comments upon an apparently typical specimen of *fuscipennis* in the American Museum of Natural History from Gatun in the Canal Zone. This apparently hopeless paradox induced Salvadori to describe them as distinct species, and made Dr. Chapman wonder if both races were ten-

able. The answer is that Tinamous recently collected on the Caribbean side of western Panama prove to be *T. m. fuscipennis* (c/o Kennard and Peters, Proc. Boston soc. nat. hist., 38, no. 10, 1928, p. 446), which ranges south through the lowlands of Costa Rica and western Panama to the Canal Zone. At the same time *T. m. castaneiceps* ranges south and east through the more open forests of the Pacific slope of western Panama to the Canal Zone, where the two races consequently meet, obviously accounting for the existence of both black and red-crowned Tinamous from the Canal Zone in collections. As we now know that many of Arcé's specimens, labeled merely "Veragua," came from the Caribbean slope of that province, the occurrence of *fuscipennis* as well as *castaneiceps* in his shipments is no longer surprising.

In eastern Panama we are still completely ignorant as to what form of *major* occurs on the Caribbean slope more than a few miles from the Zone. On the Pacific side, however, a fair amount of material exists, all of which I have examined. This material shows that *T. m. castaneiceps* crosses the Isthmus and, as we proceed eastward, becomes steadily darker, as the humidity of its environment increases, and develops a definite occipital crest. This character is pronounced in specimens from Tacarcuna (c/o Chapman, loc. cit., p. 189) and Cana, the type locality of the new race. Specimens collected by Barbour and Brooks at Jesusito are intermediate, one distinctly nearer *saturatus*, the other nearer *castaneiceps*. Undoubtedly the four birds from the "Tropical Zone of the Pacific Coast" of Colombia recorded by Dr. Chapman as *castaneiceps* belong here also. A summary of the Central American races, as I understand them, is appended.

1. *Tinamus major robustus*. Crown sooty black; no occipital crest; relatively grayer above, less reddish below, especially on the abdomen. Southern Mexico south to northern Nicaragua (in the highlands).

2. *Tinamus major fuscipennis*. Crown sooty black; no occipital crest; relatively browner above and more reddish below than the last. Caribbean lowlands of Honduras and Nicaragua and most of Costa Rica, south along the Caribbean slope of western Panama to the Canal Zone.

3. *Tinamus major castaneiceps*. Crown chestnut, finely barred with black; no occipital crest; general coloration same as the last. South-western Costa Rica and western Panama (Pacific slope) to the Canal Zone, intergrading farther east with the next.

4. *Tinamus major saturatus*. Crown darker chestnut, finely barred; a well-developed occipital crest; general coloration much darker above and darker and browner below; more heavily barred above. Extreme eastern Panama and northern Colombia.

ODONTOPHORUS GUIANENSIS CHAPMANI, subsp. nov.

Type.— No. 140,453 M.C.Z.; adult ♀; Cana, eastern Panama; July 22, 1928; Rex R. Benson.

Characters.— Most closely resembling *O. g. panamensis* Chapman of the Canal Zone, and like that subspecies differing from all the other known races in having a whitish chin and whitish bars on the throat; differing markedly from *panamensis* in being darker and more richly colored throughout, with the lighter barring on the underparts tending to be broader, with an almost spotted appearance on the flanks; head noticeably darker, the longer crest feathers blackish brown; the gray foreneck and breast a much darker shade, appearing less contrasted with the brown back in consequence; in the more highly colored specimens the breast has a rich ruddy undertone.

Material examined

Odontophorus guianensis panamensis.— Canal Zone, 3 ♂, 1 ♀; Jesusito, eastern Panama, 1 ♂; Mt. Sapo, 1 ♂, 2 ♀; El Real, 1 ♂.

Odontophorus guianensis chapmani.— Cana, eastern Panama, 1 ♂, 4 ♀.

Remarks.— This proposed new form is a dark extreme of *panamensis*, perhaps responding to the increasingly humid conditions as one proceeds eastward in Panama. Thus the specimens listed above, from Jesusito and Mt. Sapo, are intermediate between *panamensis* and the new form, but slightly nearer the former, while the bird from El Real well up the Tuyra valley in the interior is a still further approach to the new form. Specimens in the American Museum of Natural History from Tapalisa and Tacarcuna are in all probability similar intermediates.

Colombia is now the region from which material is badly needed. We do not as yet know exactly what *O. g. marmoratus* is and in what part of Colombia it occurs. According to Dr. Chapman's remarks (Bull. Amer. mus. nat. hist., 34, 1915, p. 364) birds from the eastern side of the eastern Andes are different from those on the western side of the same range, which more nearly conform to Gould's original description. If these latter should prove to be *marmoratus* on comparison with the type, the former would be a connecting link with *buckleyi* of eastern Ecuador, which is a grayish extreme with no chestnut on the side of the head. Whatever *marmoratus* may prove to be, however, the new form differs from it in the deeper and brighter coloring of the side of the head, and in the whitish chin and barring on the throat.

CHAEMEPELIA R. RUFIPENNIS (Bonaparte)

Cana, 1 ♂, 1 ♀, 1 juv.

Both sexes are a trifle darker than large series from adjacent parts of Panama and northern Colombia.

CLARAVIS PRETIOSA LIVIDA Bangs

Cana, 1 ♂.

This perfectly tenable race of western Colombia, of which I have examined the type series and the material in the American Museum of Natural History, ranges north to eastern Panama at least to the upper part of the Tuyra valley. Todd's criticism of *livida* (Birds of Santa Marta, p. 192) is entirely beside the point. He writes that after going over his series "we are unable to separate the South American birds under the name *livida*," which, of course, cannot be done, and which neither Bangs nor Chapman ever suggested.

LEPTOTILA CASSINI CASSINI Lawrence

El Tigre, Rio Cupe, 1 ♂; Cana, 3 ♂, 1 ♀.

A common forest dove throughout eastern Panama. Two of the males from Cana differ radically from any other specimens I have ever seen, in being distinctly darker both above and below and the vinaceous gloss of the interscapulum extends over the entire upper parts and wings.

OREOPELEIA VERAGUENSIS (Lawrence)

El Tigre, Rio Cupe, 1 ♀.

While a very rare bird in Costa Rica and western Panama, this species is not uncommon in eastern Panama, and there is a good series in the American Museum of Natural History from the Tuyra valley.

ARAMIDES CAJANEA CAJANEA (P. L. S. Müller)

Cana, 1 ♀.

As Bangs and Barbour have already shown, there is absolutely nothing in the race *salmoni* Chubb of northern Colombia and Panama.

CRECISCUS ALBIGULARIS (Lawrence)

Cana, 3 ♂, 3 ♀.

This series is noticeably darker than a single adult from the Canal Zone, the type locality, but the latter is an old specimen and may have faded a little.

HIMANTOPUS MEXICANUS (P. L. S. Müller)

El Real, 1 ♀.

While there are relatively few published records for this bird in Panama, it is really a common winter visitant in suitable places throughout the republic.

ACTITIS MACULARIA (Linnaeus)

Cana, 1 ♀.

The date of this specimen, July 25, 1928, is particularly noteworthy.

BUTORIDES VIRESCENS VIRESCENS (Linnaeus)

El Real, 1 ♀ adult, January 18, 1928.

The Green Heron of eastern North America is a common winter visitant throughout Panama.

BUTORIDES STRIATUS STRIATUS (Linnaeus)

El Real, 1 ♂ adult.

Our knowledge of this genus in Panama has progressed by leaps and bounds in the last few years, with the arrival in American museums of fresh breeding specimens from many different parts of this republic, as well as other parts of Central America. My colleague, Mr. J. L. Peters, will shortly review the whole *virescens* group, with which I am not here concerned. The variations of the well-known South American species *striatus* have received little study in this country, due to the absence or scarcity of adults from Surinam, the type locality. Wetmore has recently shown that birds from Argentina, Uruguay and Paraguay are distinct and must be known as *B. striatus cyanurus* (Vieillot). I heartily endorse this race, and regard it as more distinct than one would infer from Dr. Wetmore's remarks. Compared with nearly one hundred specimens from northern South America, a good series from Argentina is markedly paler throughout, the abdomen a light pearly gray

rather than slaty gray, the neck and throat more ochraceous less rufescent, in adults the darker streaking greatly reduced or absent. The material before me does not show that immature birds of *cyanura* have heavier streaking and spotting on throat and foreneck, but this may be an accident. Typical *striatus* ranges right across the continent, occurring even on Gorgona Island, off the west coast of Colombia, and ranges north to eastern Panama, and it is here recorded from Central America for the first time.

For some years I have known that a very peculiar Green Heron bred in the Canal Zone, which has been overlooked. Several specimens in the American Museum of Natural History, collected by Hallinan, were wrongly identified and recorded as *B. virescens* (c/o Auk, 1924, p. 308). More recently I have seen a few other specimens, and have seen the bird alive on Barro Colorado Island. It is instantly recognizable in life from both *virescens* and *striatus*, and may be known as

BUTORIDES STRIATUS PATENS, subsp. nov.

Type.—No. 114,030, M.C.Z., ♀ ad.; near Panama City, May 26, 1904; W. W. Brown.

Characters.—Readily distinguishable from typical *B. striatus*, in that the markings of the throat and foreneck are less rufous, more ochraceous brown; the cheeks, ear-coverts, and neck all round vary from "Benzo" brown to "hair" brown, instead of clear slaty gray; remaining underparts much darker gray, exactly resembling in this respect *B. virescens*.

This bird raises some interesting specific problems in the genus. It cannot be denied that if placed between a specimen of *virescens* and *striatus cyanurus*, it appears, roughly speaking, to be intermediate. On the other hand, if we examine the genus over the whole world, it is equally apparent that the North American *B. virescens* stands apart from the rest of the genus in having the sides of the head, neck and throat dark maroon. In this respect it is more different from *patens*, by far, than is the latter from typical *striatus*. Furthermore the legs and feet are greenish yellow in *virescens*, versus orange red in *striatus*, and the bare loreal space is bright yellow versus indigo blue. On these accounts I cannot agree with Hartert in reducing *virescens* to a subspecies of *striatus*. We must also consider the geographic evidence available. Less than 100 miles up both coasts west of the Canal Zone *virescens* breeds abundantly, and this species must actually have crossed the Zone to reach the Pearl Islands, where it is a common resident. It

would seem that the low ground of the Isthmus was a neutral zone, which has been invaded by two species from two different directions. Indeed, when we consider the known tendency of this group to vary in relative darkness, a variation which has served as a basis for the description of numerous subspecies now known to be worthless, it is far more likely that the strongly marked characters of *patens* as a race of *striatus* will be impugned by individual variation rather than that it will be found to intergrade with *virescens* in a region where almost no area for such hypothetical intergrades to inhabit exists.

I do, however, agree with Hartert that the African *B. atricapillus* cannot be regarded as specifically distinct. In series it is barely separable from *striatus* in that the rufous streaks on the throat are a fraction paler and do not spread out over the breast quite so much. This is carried a stage farther in *B. javanica* and its allies, where the light central throat stripe is only faintly bordered with a tinge of buff on an otherwise gray background. There would seem to be no good reason to regard this difference as of specific value either. On the Andaman Islands the very dark and uniform *B. spodiogaster* appears specifically distinct from *javanica*. In the same respects *B. sundevalli* of the Galapagos Islands appears specifically distinct from either *virescens* or *striatus*, its New World allies, but these two dark forms resemble each other to an astonishing degree. The group clearly shows a mutational tendency towards melanism, which crops out as an individual variation in many forms, more rarely sufficiently constant to serve as a racial character, and in two island groups, at opposite sides of the world, this tendency to melanism has become dominant, and completely supplanted the paler ancestral type from the adjacent mainland. The case is very similar to that of the Honey Creepers on the Lesser Antilles, and deserves the attention of a competent geneticist. If I have in any way correctly stated some part of the biology of these birds, it will be apparent that to argue as to the number of "species" or "subspecies" to be recognized is comparatively futile. Neither binomials nor trinomials can possibly indicate these points of underlying biological interest, and no new "revision" of species and subspecies can be imagined which will not stress one line of evidence at the expense of another.

IBYCTER AMERICANUS AMERICANUS (Boddaert)

Cana, 1 ♂.

ACCIPITER BICOLOR BICOLOR (Vieillot)

Cana, 1 ♂ imm.

LEUCOPTERNIS GHIESBRECHTI COSTARICENSIS Sclater

Cana, 1 ♂.

This beautiful Hawk is not uncommon in the hills of eastern Panama, and this specimen, taken not far from the Colombian boundary, does not differ in any detail from Costa Rican topotypes.

HERPETOTHERES CACHINNANS FULVESCENS Chapman

Cana, 1 ♂.

The systematic treatment of the Central American races of the Laughing Falcon has become quite complicated with the increase of material in recent years. Dr. Chapman described a richly colored buffy race in 1915 (Bull. A. M. N. H., **34**, p. 638) from western Colombia and Ecuador, which he extended north to Panama and "perhaps to Nicaragua." As a matter of fact, we now know that whiter birds occur throughout this area, which are consequently quite indistinguishable from typical *cachinnans*. In eastern Panama the majority of specimens I have seen are buffy, but the one listed above is white, for instance. In western Panama neither type of coloration has a clear majority, and north of Panama the very great majority of specimens are white. I have, however, seen buffy colored specimens from the lowlands of eastern Nicaragua and Honduras, and such a variation is recorded from the lowlands of Vera Cruz. How should these facts be interpreted in nomenclature? The best course, it seems to me, is to regard the richer buffy coloration a tendency in the species, which crops out even in Surinam, and to restrict the name *fulvescens* to those areas where all or a clear majority of the specimens are richly colored. The race *fulvescens* thus ranges north to the Canal Zone, and intergrades with typical *cachinnans* by individual variation, instead of the more usual condition, where intermediate forms occupy an intermediate area. The only other course would be to reduce *fulvescens* to synonymy, which does violence to obvious facts in western Colombia and Ecuador.

ICTINIA PLUMBEA (Gmelin)

Cana, 1 breeding ♂.

CICCABA VIRGATA VIRGATA (Cassin)

Cana, 1 ♀, dark phase.

The subspecific differences between far southern specimens of this common Owl and others from Central America have been overlooked by

everyone except Mr. Ridgway (Birds of N. and Mid. Amer., pt. 6, p. 765, footnote), who, however, took no definite action, because of lack of material. To this factor must be added the confusion caused by the two phases in this Owl, the dark phase of the northern bird being very close superficially to the light phase of the southern. Fortunately there is an additional character in the dark phase, as the streaking on the chest and breast is usually replaced by transverse mottling or barring. Brabourne and Chubb have recently designated "Colombia" as the type locality, so that it is the typical form, which really needs to be described. It differs from the Central American race, which I name below, in being radically darker, white completely disappearing from the underparts except the vent. The light phase averages darker than the dark phase of the "new," though better-known form, but is separable in having the underparts streaked from chin to abdomen. The dark phase is almost blackish brown above, deep buff beneath, the thighs cinnamon. Specimens from the Canal Zone are slightly intermediate, but, as is usual with Panama birds, nearer the eastern or South American form. *Syrnium lineatum* Lawrence from Lion Hill is consequently a synonym of *virgata*, so that the Central American form is named

CICCABA VIRGATA CENTRALIS, subsp. nov.

Type.—No. 238,212, M.C.Z., ♂ ad., light phase; Chivela, Oaxaca, Mexico; May 14, 1927; W. W. Brown.

Characters.—Similar to typical *Ciccaba virgata* (Cassin), but much paler throughout, the underparts never deeper than pale buff, the feathers of the abdomen and flanks always more or less white laterally, the terminal third usually pure white except for the dark shaft stripe.

Material examined

Ciccaba v. virgata.—Colombia; Santa Marta, 1 ♀, light phase; Panama; Cana, Darien, 1 ♀, dark phase; Canal Zone, 1 ♂, 1 ♀, both light phase.

Ciccaba virgata centralis.—Large series in every stage of plumage from Vera Cruz, Oaxaca, and British Honduras south to Chiriqui (Pacific slope). I have seen no specimens from Veraguas (Pacific slope) but they should belong here. Specimens from the Caribbean side of western Panama might be intermediate.

BROTOGERYS JUGULARIS JUGULARIS (Müller)

Cana, 2 ♂, 1 ♀ ?.

PIONUS MENSTRUUS (Linnaeus)

Cana, 1 ♀, 1 imm.

CHLOROCERYLE AMAZONA (Latham)

Cana, 1 ♀.

CHLOROCERYLE AMERICANA ISTHMICA Goldman

El Tigre, Rio Cupe, 1 ♂.

UROSPATHA MARTII SEMIRUFA (Sclater)

Cana, 1 ♂.

MOMOTUS SUBRUFESCENS CONEXUS Thayer and Bangs

El Real, 1 ♀.

MOMOTUS SUBRUFESCENS RECONDITUS Nelson

El Tigre, Rio Cupe, 4 ♀.

HYLOMANES MOMOTULA OBSCURUS Nelson

Cana, 2 ♂, 5 ♀.

This subspecies, of which I have seen all the recorded specimens, is a distinct one, though the color characters given in the original description are by no means constant, if a sufficiently large series of the typical form is examined, so great is individual variation in this species. As with other Motmots, there is a browner and a greener phase, and browner birds of the typical form closely approximate the alleged characters of *obscurus*. In series, however, the latter bird does average darker below, especially on the sides and flanks, the suborbital streak is less developed, the chin is buffier and more streaked with blackish, and the forehead is much less often tinged with the buffy of the lores. These characters are most pronounced in Colombian specimens, and least developed in the type from the Canal Zone. In the great majority of cases, however, Canal Zone intermediates are nearer the eastern Panama form and, with this geographic probability in mind, I greatly prefer to call all birds from the Canal Zone eastwards *obscurus*. The other course would be to regard *obscurus* as a synonym of *momotula*, and describe the Colombian bird, a nomenclatural shuffle which would serve no useful purpose.

NYCTIDROMUS ALBICOLLIS ALBICOLLIS (Gmelin)

Cana, 1 ♂, 1 ♀.

I agree entirely with Todd (Birds of Santa Marta, p. 219) that the Central American bird from Guatemala to the Canal Zone is distinct from typical *albicollis*, but there is no point in describing it until thorough restudy of the Mexican races, some of which appear very unsatisfactory.

STREPTOPROCNE ZONARIS ALBICINCTA (Cabanis)

Cana, 1 ♂, 1 ♀.

While I do not recall seeing specimens from Darien before, the occurrence of this Swift in the region was a certainty.

THRENETES RUCKERI DARIENENSIS Bangs and Barbour

El Tigre, Rio Cupe, 1 ♂.

GLAUCIS HIRSUTA AFFINIS Lawrence

Cana, 1 ♂.

PHŒTHORNIS GUY CORUSCUS Bangs

Cana, 1 ♀.

This specimen has as blue a rump as any in the large series of topotypes from Costa Rica. A series from the Pacific side of the western Andes of Colombia undoubtedly belong here also, and not to *emiliae*.

POLYERATA AMABILIS (Gould)

Cana, 3 ♂, 1 ♀.

DAMOPHILA PANAMENSIS Berlepsch

El Real, 1 ♀; El Tigre, Rio Cupe, 1 ♂.

THALURANIA FANNYI FANNYI (Delattre and Bourcier)

Cana, 3 ♂, 1 ♀.

CHALYBURA BUFFONI MICANS Bangs and Barbour

Cana, 1 ♀.

COLIBRI DELPHINAE (Lesson)

Cana, 2 ♂.

Oddly enough this widely ranging species has only been recorded in Panama from the Caribbean side of the Pico Calovevora in Veraguas.

HELIODOXA JACULA JACULA Gould

Cana, 1 ♂ imm., 1 ♀.

These birds in their small size and bronze-tinged central tail feathers are clearly referable to the typical form of "Bogota." The genus has never been recorded between western Panama and Colombia, though its occurrence in the mountains of eastern Panama was to be expected.

KLAIS GUIMETI (Bourcier and Mulsant)

Cana, 1 ♂.

TROGON COLLARIS EXTIMUS, subsp. nov.

Type.— No. 140,533, M.C.Z., ♀ breeding; Cana, Darien; March 22 1928; Rex R. Benson

Characters.— Similar to *Trogon collaris virginalis* (Cab. and Heine) of western Ecuador and Colombia, but slightly smaller; adult male differing in having the freckling on the wing-coverts finer and darker, with more black and less white; female with the brown areas darker, most noticeable on the rump, but easily separable by the difference in the three outer pairs of tail feathers, which have a much greater area of solid black on the inner webs.

Remarks.— The discovery of a new race of this species in eastern Panama, while adding one more South American species to that apparently inexhaustible bird fauna, is of special geographic interest in closing the gap between the Central American *T. puella* and the South American *T. collaris*. The adult male is very close to *T. e. virginalis*, but in the darker vermiculation of the wing-coverts exactly resembles *puella*. It differs from the latter, however, in having the broader white bars and tips to the tail feathers of *collaris*. While *virginalis* and *extimus* have narrower bars than true *collaris*, they are not strictly intermediate in this respect, but are obviously nearer *collaris* than *puella*. With females the case is very different, the newly described form being a perfect connecting link with *puella*. Systematists can consequently take their choice in treating *puella* as specifically distinct or as a subspecies of *collaris*.

Material examined

Trogon c. collaris.—6 ♂, 8 ♀ from Trinidad, Tobago, northwest Venezuela and east Ecuador.

Trogon collaris virginalis.—9 ♂, 8 ♀ from western Peru and Colombia.

Trogon collaris extimus.—1 ♂, 2 ♀, Cana, eastern Panama.

Trogon collaris puella.—Large series from the entire range.

Measurements of Wing

	Male	Female
<i>T. collaris virginalis</i>	119–125	119–126
<i>T. collaris extimus</i>	115.2	113.2–114

TROGON STRIGILATUS CHIONURUS Sclater and Salvin

El Tigre, Rio Cupe, 1 ♂; Cana, 2 ♂.

CURUCUJUS MELANURUS MACRURUS (Gould)

Cana, 1 ♂; El Real, 1 ♀.

PIAYA CAYANA THERMOPHILA Sclater

El Tigre, Rio Cupe, 1 ♀; Cana, 1 ♂, 2 ♀.

COCCYCUA RUTILA PANAMENSIS Todd

Cana, 1 ♀.

NEOMORPHUS SALVINI SALVINI Sclater

Cana, 1 ♂.

CROTOPHAGA ANI Linnaeus

Cana, 1 ♂, 2 ♀.

EUBUCCO BOURCIERI ANOMALUS, subsp. nov.

Type.—No. 140,512, M.C.Z., ♂, approaching the breeding season; Cana, eastern Panama; August 1, 1928; Rex R. Benson.

Characters.—Differing from all the described races of the species in being smaller, and streaking on abdomen narrower, more sharply defined and darker; in other color characters nearer to typical *bourcierii* than to either of the geographical allies, *salvini* and *occidentalis*.

Material examined

Eubucco b. bourcierii.—"Bogota," Colombia, 5 ♂, 2 ♀.

Eubucco b. occidentalis.—Colombia, various localities on the west slopes of the western Andes, 8 ♂, 5 ♀.

Eubucco b. anomalus.—Eastern Panama, Cana, 3 ♂, 1 ♀.

Eubucco b. salvini.—Very large series from Costa Rica and western Panama.

Remarks.—Another discovery of geographic interest, as this genus has hitherto been unknown between western Panama and Colombia. It is rather surprising to find how closely *salvini* of Central America and *occidentalis* of western Colombia resemble each other, the color characters separating them being obviously only in series. Between them geographically comes *anomalus* of eastern Panama, a very different bird, more closely allied in certain respects to typical *bourcierii*. Below I give a summary of the characters of the new form and its allies. The streaking on the abdomen holds for both sexes.

Eubucco b. bourcierii.—Male:—red of throat greatly extended over breast, with a very narrow zone of yellow between it and the abdomen; abdomen more broadly streaked; wing 70–75. Female:—chin paler, less yellow; black on forehead narrower, with a broad blue posterior margin; orange of head more extended, reaching nape.

Eubucco b. anomalus.—Male:—red of throat not invading breast, the yellow and orange area narrower; abdomen more heavily, darkly and narrowly streaked; wing 66.5–69.5. Female:—chin much yellower; no blue posterior margin to forehead; orange of head less extended, not reaching to nape.

Eubucco b. salvini.—Male:—red of throat succeeded by broad areas of orange and yellow; streaking of abdomen duller and more diffuse than in *bourcierii*; wing 68–72.5. Female:—chin intermediate between *bourcierii* and *anomalus*; black area on forehead broader with a very narrow posterior margin of blue; orange of head as in *anomalus*.

Eubucco b. occidentalis.—Closely resembling *salvini* but more richly colored, the ground color of abdomen slightly yellower, in males the orange and yellow areas more extensive and a trifle deeper; wing 70–73.

RHAMPHASTOS PISCIVORUS BREVICARINATUS Gould

Cana, 1 ♂, 1 ♀.

RHAMPHASTOS SWAINSONI Gould

Cana, 1 ♂.

PTEROGLOSSUS TORQUATUS TORQUATUS (Gmelin)

Cana, 1 ♂.

JACAMEROPS AUREA PENARDI Bangs and Barbour

El Tigre, Rio Cupe, 1 ♀.

NOTHARCUS HYPERRHYNCHUS LEUCOCRISSUS (Sclater)

El Real, 1 ♀.

For the occurrence of this race in eastern Panama, see Chapman, Birds of Colombia, p. 340.

NOTHARCUS TECTUS SUBTECTUS (Sclater)

El Tigre, Rio Cupe, 1 ♀.

NYSTALUS RADIATUS (Sclater)

Cana, 3 ♂, 4 ♀.

MALACOPTILA PANAMENSIS PANAMENSIS Lafresnaye

Cana, 3 ♀.

NONNULA FRONTALIS FRONTALIS (Sclater)

El Real, 1 ♂, 1 ♀; El Tigre, 1 ♂; Cana, 3 ♂, 2 ♀.

The status of Panama specimens of this little Nun-bird has been uncertain for some years, due to the lack in the United States of typical Colombian specimens. These have recently been acquired by the Carnegie Museum and thanks to the courtesy of Mr. W. E. Clyde Todd I have been able to examine six specimens from Antioquia and Santander, and also a series of the very distinct *pallescens* Todd from Santa Marta. With nineteen specimens in all from eastern Panama before me, individual variation is excellently represented, and there is no doubt but what they are inseparable from typical *frontalis* and show no approach whatever to *pallescens*.

CHRYSOPTILUS PUNCTIGULA LUCESCENS, subsp. nov.

Type.—No. 140,590, M.C.Z.; ♂ adult; El Real, eastern Panama; January 18, 1928; Rex R. Benson.

Characters.—Nearest *Chrysophilus p. striatigularis* Chapman, but differing from it and every other described form in having the white

throat much more narrowly streaked with black, and the general coloration much brighter and clearer, the rump a cleaner sulphur yellow, the underparts also a deeper and purer yellow, the breast with far more of an orange tawny wash, invaded by the red of the malar stripe; spotting of underparts greatly reduced, even less than in *ujhelyii*, entirely wanting except on breast and center of abdomen, where the individual spots are half the size of those in *striatigularis*.

Crosby and I added this Woodpecker to the Panama avifauna in February 1927 (Amer. Mus. Novitates, no. 282, p. 6). The single specimen collected at Cape Garachiné differed obviously from its closest relative, *striatigularis*, but in so variable a group I preferred to see these differences confirmed. The present specimen has these characters developed to an even greater degree, and I have no hesitation left in describing it.

CENTURUS PUCHERANI PUCHERANI (Malherbe)

Cana, 1 ♂.

VENILIORNIS KIRKII CECILIAE (Malherbe)

Cana, 3 ♂.

With more material from eastern Panama available, I entirely agree with Dr. Chapman that *V. k. darienensis* Ridgway is untenable (c/o Distribution of Bird-Life in Ecuador, p. 366).

PHLOEOCEASTES MALHERBII (Gray)

El Tigre, Rio Cupe, 1 ♀.

CEOPHLOEUS LINEATUS MESORHYNCHUS (Cabanis and Heine)

Cana, 1 ♂.

PICUMNUS OLIVACEUS OLIVACEUS Lafresnaye

Cana, 3 ♂, 3 ♀.

Until better series are available, the Piculet of extreme eastern Panama must be referred to typical *olivaceus* of Colombia. West of the more humid forested areas of eastern Panama, in the scrub country from the Canal Zone westward to western Costa Rica, only one form *flavotinctus* occurs. I have seen nearly one hundred specimens from every part of this area, and an excellent series from the Canal Zone now before me shows that it is quite impossible to maintain the proposed local race *panamensis* Ridgway.

CYMBILAIMUS LINEATUS FASCIATUS (Ridgway)

Cana, 4 ♂, 3 ♀.

TARABA MAJOR TRANSANDEANA (Sclater)

Cana, 1 ♂, 1 ♀.

THAMNOPHILUS NIGRICEPS Sclater

El Tigre, Rio Cupe, 1 ♂; El Real, 1 ♀.

While this antshrike has only once been recorded from eastern Panama, it is really one of the common birds in the more arid tropical forest near the coast and up the larger rivers, which is characterized by the giant *Cavanillesia* or "cuipo" tree.

THAMNOPHILUS PUNCTATUS ATRINUCHA Salvin and Godman

El Tigre, Rio Cupe, 1 ♂; Cana, 5 ♂, 3 ♀.

The four females from Cana are appreciably darker brown than any other Central American specimens. These differences must be highly local, even if constant, as Colombian and Ecuadorean specimens are lighter again.

THAMNISTES ANABATINUS CORONATUS Nelson

Cana, 2 ♂, 4 ♀.

MYRMOTHERULA BRACHYURA IGNOTA, subsp. nov.

El Tigre, Rio Cupe, 1 ♀.

Type.—No. 87,224, M.C.Z.; ♂ ad.; Jesusito, eastern Panama; April 7, 1922; Barbour and Brooks.

Characters.—Similar to typical *M. brachyura* of Cayenne and Amazonia, but the light streaking on pileum, wings and back greatly reduced, resulting in more solidly blackish areas; female with much paler rufous crown stripes, and no fulvous on throat.

Remarks.—This distinct race has been overlooked for the reason that this tiny Ant-wren has only twice been recorded from Panama. The two recently collected specimens before me, when compared with an equally fresh series from eastern Ecuador, show very clearly the characters given above. The measurements below may indicate that the new form is also smaller.

Measurements of Wing

M. b. brachyura, 3 ♂, 38.5-44 (41.1); 4 ♀, 40.5-43.5 (42.5)

M. b. ignota, 2 ♂, 38.5-39.5 (39); 1 ♀, 38.5

MYRMOTHERULA SURINAMENSIS PACIFICA Hellmayr

Cana, 6 ♂, 7 ♀.

MYRMOTHERULA FULVIVENTRIS Lawrence

El Tigre, Rio Cupe, 1 ♀.

MYRMOTHERULA AXILLARIS ALBIGULA Lawrence

El Tigre, Rio Cupe, 3 ♂, 1 ♀; Cana, 1 ♂.

MYRMOTHERULA SCHISTICOLOR SCHISTICOLOR (Lawrence)

Cana, 1 ♂.

MICRORHOPIAS QUIXENSIS CONSOBRINA (Sclater)

Cana, 1 ♂, 3 ♀.

CERCOMACRA TYRANNINA RUFIVENTRIS (Lawrence)

El Tigre, Rio Cupe, 1 ♂, 2 ♀; Cana, 4 ♂, 4 ♀.

CERCOMACRA NIGRICANS Sclater

Cana, 3 ♂.

GYMNOCICHLA NUDICEPS NUDICEPS (Cassin)

Cana, 1 ♀.

MYRMECIZA MACULIFER CASSINI (Ridgway)

El Tigre, Rio Cupe, 1 ♂, 2 ♀; Cana, 2 ♂, 1 ♀.

I have elsewhere (Amer. Mus. Novitates, no. 282, 1927, p. 6) given my reasons for regarding this bird as specifically distinct from *M. exsul*.

MYRMECIZA IMMACULATA BERLEPSCHI Ridgway

Cana, 3 ♂, 1 ♀.

FORMICARIUS ANALIS PANAMENSIS Ridgway

Cana, 1 ♂, 3 ♀.

GYMNOPITHYS BICOLOR BICOLOR (Lawrence)

El Tigre, Rio Cupe, 1 ♂, 1 ♀; Cana, 2 ♂, 1 ♀.

HYLOPHYLAX NAEVIOIDES NAEVIOIDES (Lafresnaye)

El Tigre, Rio Cupe, 1 ♂, 1 ♀.

MYRMORNIS STICTOPTERA (Salvin)

El Tigre, Rio Cupe, 1 ♂.

GRALLARIA GUATIMALENSIS CHOCOENSIS Chapman

Cana, 1 ♂.

This individual agrees minutely with the small measurements given for this form, to date known only from one specimen, and also the lores are mixed with blackish. In other respects it agrees minutely in color with richly tinted specimens of *princeps*. This is another subtropical zone genus here recorded for the first time in eastern Panama.

GRALLARIA FULVIVENTRIS BARBACOE Chapman

Cana, 1 ♂.

There has been a great gap between the range of the South American forms of this species and the outlying representative *dives* in Costa Rica, which has now been partially filled. The specimen listed above differs from two topotypes of *barbacoae* only in being a little paler and more olive above, a character which may or may not prove constant, when a series becomes available in the future. There is another specimen in the American Museum of Natural History (No. 135,797), taken at Tacarcuna in 1915, already recorded by Hellmayr (Cat. Birds of the Americas, pt. 3, p. 351). Benson collected a new form *G.f. flammulatus* Griscom at Almirante in 1927, so that this species is now known from both eastern and western Panama.

SYNALLAXIS BRACHYURA CHAPMANI Bangs and Penard

Cana, 7 ♂, 1 ♀.

There has been considerable difference of opinion recently as to the proper treatment of eastern Panama, west Colombia and west Ecuador specimens of this species. Dr. Chapman in his Colombian report pointed out the respects in which west Colombian birds differed

from the Nicaraguan *nigrifumosa*. These differences were named formally by Bangs and Penard, who had additional material from western Colombia. Some years later Dr. Chapman found that birds from west Ecuador, a drier climate, were even paler than Colombian birds and, while refusing to recognize the validity of *chapmani*, described *griseonucha*. Dr. Hellmayr was unable to accept this disposition of the case (Cat. Birds of the Americas, pt. 3, p. 92) and regarded *chapmani* as a poor race, but referred all specimens from the Canal Zone southward to it. With the advantage of having seen all the material in both institutions, there is no doubt that the extremes from Nicaragua and southwest Ecuador are quite different. We have here, then, the all too familiar case of two excellent extremes, where the intermediate form occupies a larger area than either, and was named prior to one of the extremes. In such cases either three very slight forms are maintained, or the intermediate one is stretched to include one of the extremes. This is Dr. Hellmayr's solution and it is probably the better.

AUTOMOLUS PALLIDIGULARIS PALLIDIGULARIS Lawrence

El Tigre, Rio Cupe, 1 ♂; Cana, 2 ♂, 3 ♀.

AUTOMOLUS NIGRICAUDA SATURATUS Chapman

Cana, 1 ♀.

PHILYDOR FUSCIPENNIS ERYTHRONOTUS Selater and Salvin

Cana, 3 ♂.

Dr. Chapman has already shown that *Philydor erythronotus* occurs in eastern Panama and that *P. fuscipennis* represents it in western Panama (Distribution of Bird-Life in Ecuador, p. 447). Like *Xenicopsoides*, young birds are much more fulvous and ruddy underneath. The bird recorded by Bangs and Barbour (Bull. M.C.Z., 65, 1922, p. 211) as *fuscipennis* is really this form. In western Panama *fuscipennis* is an exceedingly rare bird. There is an old faded Arcé skin in the American Museum of Natural History, purporting to come from Chitra in Veraguas, and in 1926 Benson and Gaffney secured four specimens for me on the Rio Calovevora in the Caribbean rain forest. The type locality, "Santiago de Veraguas," was Arcé's residence, but none of his forest species ever came from there. From *erythronotus*, *fuscipennis* differs chiefly in being more olive-brown, less rufous on the back.

XENOCTISTES SUBALARIS TACARCUNAE (Chapman)

Cana, 1 ♂, 2 ♀.

A well-marked form previously recorded only from the type locality.

XENOPS MINUTUS LITTORALIS Sclater

El Tigre, Rio Cupe, 1 ♀; Cana, 4 ♂.

As is so often the case, the low-lying land of the Canal Zone is the dividing line between two recognizable forms of this little Ovenbird. East of the Zone all specimens seen are distinctly more olivaceous below, with a more dusky pileum. They are inseparable from *littoralis* of west Ecuador and west Colombia. West of the Zone very large series available are browner below with a less dusky pileum, and agree with specimens from Costa Rica and eastern Nicaragua. For these the name *ridgwayi* Hartert and Goodson is available and this has been correctly applied by Dr. Hellmayr (Cat. Birds of the Americas, pt. 4, p. 237), except that he gives *ridgwayi* as ranging throughout Panama, which it does not. Specimens from Mt. Sapo and Jesusito, eastern Panama, recorded by Bangs and Barbour as *ridgwayi*, are in reality *littoralis*. It was probably a similar assumption, that *ridgwayi* was the "Panama" form, which caused Dr. Chapman recently to impugn its validity (c/o Distribution of Bird-Life in Ecuador, p. 450).

XENOPS RUTILUS HETERURUS Cabanis and Heine

Cana, 1 ♂, 1 ♀.

This species of *Xenops* is an exceedingly rare bird in Central America, less than ten specimens being in existence from Costa Rica and the Volcan de Chiriqui. It is of some interest, therefore, to record it from eastern Panama. The subspecific identity of the two specimens listed above must remain doubtful until series from both eastern and western Panama are available. The Cana birds are more olivaceous, less brownish below, than Colombian specimens, and are very much smaller, the wing 60 and 61 mm., compared with a range of 66.5–70.5. They would appear to be an unnamed form, but to do so would serve no useful purpose, as it would leave the status of west Panama birds in doubt. Two specimens from Chiriqui are also olivaceous below, but have heavier bills as in typical *heterurus*, and are exactly intermediate in size, the wing 61.5 and 67 respectively. When adequate series are compared

with *heterurus*, however, I think it probable that two distinct forms can be discriminated.¹

SCLERURUS GUATEMALENSIS GUATEMALENSIS (Hartlaub)

Cana, 1 ♂.

GLYPHORHYNCHUS SPIRURUS PECTORALIS Sclater and Salvin

Cana, 1 ♂, 1 ♀.

DENDROCINCLA MERULOIDES RIDGWAYI Oberholser

El Real, 1 ♂; El Tigre, Rio Cupe, 2 ♀; Cana, 1 ♂, 1 ♀.

DECHONYCHURA TYPICA DARIENENSIS, subsp. nov.

Type.—No. 140,413, M.C.Z.; ♀ adult; Cana, eastern Panama; August 6, 1928; Rex R. Benson.

Characters.—Similar to *D. t. typica* Cherrie of southwestern Costa Rica, but smaller and much darker; upper parts darker and more olive brown, less umber; underparts similarly darker and more olive; buffy of chin, throat and breast spots deeper, the border to the breast spots almost blackish; bend of wing only faintly washed with dark cinnamon; wing, 85.5; tail, 80.5; culmen, 18.

Remarks.—Our knowledge of this little known genus has grown by leaps and bounds in the last ten years, and the new form here described fills in one of the gaps in the range of the genus. In Amer. Mus. Novitates, no. 293, January 12, 1928, p. 1, I provisionally recorded two specimens collected by Benson at Almirante as *D. typica minor* Todd. These birds may, however, represent still another subspecies. The dark coloration of the new form is very striking at a glance, and its color characters are, consequently, diametrically opposite to those of the paler *minor*.

XIPHORHYNCHUS GUTTATUS NANUS (Lawrence)

Cana, 2 ♂, 2 ♀.

XIPHORHYNCHUS LACHRYMOSUS LACHRYMOSUS (Lawrence)

El Tigre, Rio Cupe, 1 ♂, 2 ♀.

LEPIDOCOLAPTES SOULEYETHI LINEATICEPS (Lafresnaye)

Cana, 2 ♂, 2 ♀.

¹ Since this was written, the Costa Rican bird has been described as *Septentrionalis* Zimmer, Proc. Biol. Soc. Wash., 42, 1929, pp. 82-83.

DENDROCOLAPTES CERTHIA SANCTI-THOMAE (Lafresnaye)

El Real, 1 ♀.

PLATYRINCHUS CORONATUS SUPERCILIARIS Lawrence.

El Tigre, Rio Cupe, 1 ♂.

RHYNCHOCYCLUS OLIVACEUS BARDUS (Bangs and Barbour)

Cana, 3 ♂, 4 ♀.

TOLMOMYIAS FLAVOTECTUS (Hartert)

El Tigre, Rio Cupe, 1 ♂.

TODIROSTRUM CINEREUM CINEREUM (Linnaeus)

Cana, 2 ♂.

These two specimens are intermediate between typical *cinereum* and *finitimum* Bangs of Central America north of the Canal Zone, but are distinctly nearer the former in the grayer, less green back, and the less sharply contrasted less blackish crown. The species does not seem to have been recorded previously from eastern Panama, though its occurrence was, of course, to have been expected.

ONCOSTOMA OLIVACEUM (Lawrence)

El Real, 1 ♂, 1 ♀; El Tigre, Rio Cupe, 1 ♂; Cana, 1 ♂.

This curious little Flycatcher is common and widely distributed in all the more heavily forested regions of eastern Panama. I cannot agree with Dr. Hellmayr in treating it as a subspecies of *O. cinereigulare*, admittedly, however, a matter of opinion rather than of fact.

LOPHOTRICCUS PILEATUS SQUAMAECRISTA (Lafresnaye)

Cana, 1 ♂, 1 ♀.

Another genus previously unknown between western Panama and Colombia. As might be expected the east Panama bird belongs to the South American rather than the Central American form.

MIONECTES OLIVACEUS HEDERACEUS Bangs

Cana, 1 ♀.

PIPROMORPHA OLEAGINEA PARCA Bangs

El Real, 1 ♂; El Tigre, Rio Cupe, 1 ♂, 1 ♀; Cana, 2 ♂, 1 ♀.

LEPTOPOGON SUPERCILIARIS TROGLODYTES, subsp. nov.

Cana, 6 ♂, 2 ♀.

Type.—No. 140,511, M.C.Z.; ♀ adult; Cana, eastern Panama; June 27, 1928; Rex R. Benson.

Characters.—Similar in coloration to typical *Leptopogon superciliaris* of central Peru and eastern Ecuador, but much smaller; smaller also than the geographically adjacent *poliocephalus* of Colombia, but underparts brighter yellow, breast a purer green, and wing-bars and edgings buffier.

Remarks.—Two reviews of this Flycatcher have recently been published (c/o Chapman, Distribution of Bird-Life in Ecuador, pp. 499–500; also Hellmayr, Cat. Birds of the Americas, pt. 5, pp. 484–487). Both leave the status of the Central American bird uncertain, and they disagree radically in their treatment of the South American birds north of Peru. Dr. Chapman had the advantage of having far larger series available for comparison. I am familiar with this material, and agree thoroughly with him that *poliocephalus* Cabanis and Heine is entirely worthy of recognition as an average race, and the material in the Museum of Comparative Zoölogy supports this view. There seems no question but that west and central Colombian birds in series are paler yellow below, a trifle more gray green on the chest, and have yellower, less buffy wing-bars, in spite of the admitted individual variation which exists in all three respects. If the validity of *poliocephalus* be admitted, it deprives *venezuelensis* of any color character, as those claimed by Hellmayr are exactly the same as those of *poliocephalus*. The recognition of this race, therefore, will have to rest solely on slight size differences, the wing of males 64–68 mm. according to Hellmayr, as against 68–72 in Colombian and Peruvian specimens. The claims of west Ecuador birds to recognition as *transandinus* Berlepsch and Taczanowski are even more dubious, as the color characters noted by Hellmayr in nine specimens are not appreciable in nine other specimens in New York. Proceeding northward to eastern Panama, we return to the brighter coloration of typical *superciliaris* correlated with a marked decrease in size, the wing of 6 males 61.5–65, of 2 females 58–58.5. With characters of both color and size, these birds seem fully entitled to formal recognition.

‡ The Costa Rican representative of this species has never received proper recognition, due to its rarity. Both Hellmayr and Chapman had seen but one or two specimens. The Museum of Comparative Zoölogy alone possesses an adequate series (12), but when Bangs was studying

his Costa Rica collections there was practically nothing available from South America. With his usual acumen Dr. Hellmayr (loc. cit., p. 485) points out that the single specimen from Costa Rica examined by him had a slightly brighter green back and a less slaty, more olivaceous head. These points prove to be constant in series, so I propose

LEPTOPOGON SUPERCILIARIS HELLMAYRI, subsp. nov.

Type.—No. 116,207, M.C.Z.; ♂ adult; Carrillo, Costa Rica; November 23, 1898; C. F. Underwood

Characters.—Resembling *L. s. superciliaris* and *L. s. troglodytes* in general coloration, but back a very slightly brighter green; head less slaty, more olivaceous, less sharply defined from the green back, the feathers of rear half of the crown and nape olive basally and often edged laterally with olive; size small as in *L. s. troglodytes*, wing in 8 males 63.5–67, in 4 females 57.5–61.

TYRANNISCUS VILISSIMUS PARVUS Bangs

Cana, 1 ♂.

ELAENIA FLAVOGASTRA SUBPAGANA Sclater and Salvin

Cana, 1 ♀.

This specimen is intermediate between *subpagana* and typical *flavogastra*, but is distinctly nearer the Central American form.

ELAENIA GAIMARDII MACILVAINI Lawrence

Cana, 2 ♀.

LEGATUS LEUCOPHAUS LEUCOPHAUS (Vieillot)

Cana, 1 ♂.

MYIOZETETES CAYANENSIS HARTERTI Bangs and Penard

Cana, 2 ♂, 3 ♀.

This is a perfectly tenable subspecies in series, but the Cana specimens from extreme eastern Darien show a distinct approach to the Colombian *hellmayri*.

MYIOZETETES GRANADENSIS GRANADENSIS Lawrence

Cana, 1 ♀.

MYIODYNASTES MACULATUS MACULATUS (Müller)

Cana, 3 ♂, 4 ♀.

I agree with Todd and Carriker in regarding the characters of the northern race *nobilis* Sclater as too slight and variable for recognition.

ONYCHORHYNCHUS MEXICANUS FRATERCULUS Bangs

Cana, 2 ♂, 1 ♀.

CNIPODECTES SUBBRUNNEUS SUBBRUNNEUS (Sclater)

El Real, 1 ♂; El Tigre, Rio Cupe, 1 ♂, 1 ♀; Cana, 3 ♂, 9 ♀.

MYIOBIUS SULPHUREIPYGUS AUREATUS Bangs

Cana, 1 ♂.

MYIOBIUS ATRICAUDUS ATRICAUDUS Lawrence

Cana, 2 ♂.

TERENOTRICCUS ERYTHRURUS FULVIGULARIS (Salvin and Godman)

El Tigre, Rio Cupe, 1 ♀.

APHANOTRICCUS AUDAX (Nelson)

Cana, 1 ♂.

Apparently this is the third recorded specimen of a very distinct species, which was described as a new genus *Praedo*. The original diagnosis states that it is closely allied to *Aphanotriccus*, but with a strong resemblance in coloration to *Empidonax*. Then follows a long list of structural respects in which it differs from *Empidonax*, to which it might be added that the basal phalanx of the outer toe is entirely coherent to the middle toe, as in *Myiobius*, *Myiotriccus*, and *Aphanotriccus*, whereas it is entirely free in *Myiophobus* and *Empidonax*. No structural characters, however, are given by which *Praedo* can be separated from *Aphanotriccus*, nor are there any that could seriously be urged as of generic value, especially when we consider how slight are the claims of *Aphanotriccus* to separation from *Myiobius*. In shape and proportions of bill, development of the rectal bristles, wing and tail proportions, and primary formula, *Praedo audax* Nelson is exactly the same as *Aphanotriccus capitalis*. At first sight the coloration of *audax*

strongly suggests *Empidonax*, but careful comparison shows that, while a very distinct species, it is obviously a representative of *Aphanotriccus capitalis*. Both are small Flycatchers with the head grayer and darker than the back, with two colored wing-bars, a whitish chin and throat, a darker, broad breast band and yellow abdomens. In *capitalis* a brown or tawny wash produces a bird with an olive back, tawny wing-bars and an ochraceous-cinnamon breast band. In *audax* a green wash produces a bird with an olive-green back, greenish yellow wing-bars, and an olive green breast band. They are closely allied, even in the color of the bill. *Aphanotriccus* differs from *Myiobius* in having a mandible almost as dark as the maxilla. This is true both of *audax* and *capitalis*, and they differ only in that the bill of the former is blacker throughout rather than browner. I am convinced, therefore, that in *Praedo audax* we have merely a specifically distinct representative of *Aphanotriccus capitalis*, even so, one of the most interesting discoveries made by Goldman in eastern Panama. Both are rare and local inhabitants of the densest sort of tropical rain forest, and replace each other in widely disconnected areas.

Even with the suppression of the genus *Praedo*, generic lines in this group of Flycatchers are technically difficult and unsatisfactory. *Myiobius* (*sensu stricto*) and *Empidonax* are clearly distinct both in coloration and structure. But the difference in coloration is pretty well bridged if we pass from *Myiobius* to *Myiotriccus* and the two species of *Aphanotriccus*. In structure *Myiophobus* is a *Myiobius* with the free outer toe of *Empidonax*. *Mitrephanes* seems even more different from *Myiobius* than *Empidonax*, but *Empidonax atriceps* approaches *Mitrephanes* in certain respects, and the aberrant Peruvian species *ochraceiventris* Cabanis is banded about from *Mitrephanes* to *Myiophobus*, where it is less out of place, but obviously not in place. Finally the recently described *Xenotriccus* Dwight and Griscom combines certain characters of *Aphanotriccus* and *Mitrephanes*, with others suggesting a different subfamily. It has been my good fortune to examine every described genus of the family and practically all the aberrant species, and I am more than ever impressed by the utter hopelessness of producing a classification, which will compare with that of some older group, where natural selection and evolution have had an additional million years or so to exterminate a vast horde of variously intermediate types. Finally, to be perfectly honest, we do not really know what a Tyrant Flycatcher is.

MITREPHANES BERLEPSCHI EMINULUS Nelson

Cana, 1 ♂, 2 ♀.

It is entirely a matter of opinion as to whether *phaeocercus*, *aurantiiventris*, *berlepschi* and *olivaceus* should be regarded as specifically distinct or as subspecies of *phaeocercus*. I prefer the former course, as in Central America, at least, the sharp breaks in the continuity of the Sub-tropical Zone are accompanied by equally sharp breaks in the color characters. There is no doubt but what *aurantiiventris* of Costa Rica and western Panama is half way between *phaeocercus* and *berlepschi*, but I have yet to see a specimen which could not instantly be placed in one of the three groups without comparison.

EMPIDONAX FLAVIVENTRIS (Baird)

Cana, 1 ♂, April 14.

Previously unrecorded beyond the Canal Zone.

MYIARCHUS TUBERCULIFER BRUNNEICEPS Lawrence

El Tigre, Rio Cupe, 1 ♂; Cana 1 ♂, 1 ♀.

TYRANNUS MELANCHOLICUS CHLORONOTUS Berlepsch

Cana, 3 ♂, 5 ♀.

TYRANNUS TYRANNUS (Linnaeus)

Cana, 1 ♂, 1 ♀, April 26.

OXYRUNCUS BROOKSI Bangs and Barbour

Cana, 1 ♂.

CHLOROPIPO HOLOCHLORA LITAE Hellmayr

Cana, 1 ♂.

The only reference to the occurrence of this genus in Panama is that of Dr. Chapman (Distribution of Bird-Life in Ecuador, p. 533), where eastern Panama is included in the range of this form.

PIPRA ERYTHROCEPHALA ACTINOSA Bangs and Barbour

El Tigre, Rio Cupe, 1 ♂ imm.

PIPIRA ERYTHROCEPHALA ERYTHROCEPHALA (Linnaeus)

Cana, 5 ♂, 2 ♀.

The race *actinosa* is perfectly distinct from typical *erythrocephala* in that the female is an obviously paler and grayer olive below. A large series from Santa Marta shows these characters equally clearly, and they would have to be called *actinosa* also, in spite of the fact that its distribution would apparently have to be discontinuous. In eastern Panama at least, *actinosa* is a common and characteristic forest bird ranging from Chimán at least to the lower half of the Tuyra River delta. The series from Cana is obviously a different subspecies, the females darker and more olive green, and both sexes slightly smaller, though the size differences claimed for the various races are minute. In other words, these Cana birds are indistinguishable from typical *erythrocephala*, which Dr. Chapman years ago (*Distribution of Bird-Life in Colombia*, 1917) recorded from the whole of Colombia west of the eastern Andes. The occurrence, then, of *erythrocephala* at Cana just across the boundary seems entirely possible, but the situation is further complicated by the recently described Santander race, *flammiceps* Todd, the male of which has a good character, though the female is as yet undescribed.

PIPIRA MENTALIS MINOR Hartert

Cana, 1 ♀.

No form of this species has hitherto been recorded from Panama east of the Canal Zone. The Colombian race is the one to be expected at Cana. The single female is distinctly as yellowish olive green as any specimen of *minor*, and the wing measures only 56.5 mm. It will be interesting to discover just how *erythrocephala* and *mentalis* divide the country between them in places where they occur together.

CORAPIPO ALTERA ALTERA Hellmayr

Cana, 2 ♂.

MANACUS VITELLINUS VITELLINUS (Gould)

El Real, 1 ♂.

MANACUS VITELLINUS VIRIDIVENTRIS, subsp. nov.

Cana, 1 ♂, 2 ♀.

Type.—No. 124,545, M.C.Z.; 8 ad.; Jiménez, near Buenaventura, Pacific slope of western Colombia; April 6, 1907; M. G. Palmer.

Characters.—Resembling typical *Manacus vitellinus* of Panama (I here designate Lion Hill, Canal Zone, as a more exact type-locality), but yellow of throat and nuchal collar paler, less orange, approaching the paler *M. v. milleri* Chapman in this respect; remaining underparts darker, more olive and less yellowish on the center of the belly; in the latter respect the female even more obviously distinct.

Material examined

Manacus v. vitellinus.—Panama, from the Canal Zone to El Real, lower Tuyra River, 25 ♂, 6 ♀.

Manacus vitellinus viridiventris.—Panama, Cana, 1 ♂, 2 ♀; Colombia, Jiminez, 2 ♂, 2 ♀; Pavas, 1 ♂.

Remarks.—In reporting on Palmer's collection, Dr. Hellmayr (P.Z.S., 1911, p. 1141) comments on the single male specimen from Panama then available as being less green on the belly. In 1917 Dr. Chapman (Distribution of Bird-Life in Colombia, p. 487) thought that the belly might average paler in Canal Zone specimens "while the orange areas are most deeply colored in a specimen from Chorrera." The fine series of perfect skins now available from the Canal Zone shows these points very clearly and additional material from western Colombia emphasizes the distinctness of the females, which is of greater degree than that of the males. The paler bellied *milleri* is the opposite extreme from *viridiventris*. Typical *vitellinus* is really an intermediate between the distinct *aurantiacus* of western Panama and the west Colombian *viridiventris*. The specimens from Cana, eastern Panama, are distinctly intermediate, but nearer the Colombian form. Series from the upper Tuyra valley, therefore, do not properly represent this species.

SAPOYOA AENIGMA Hartert

Cana, 1 ♂.

TITYRA SEMIFASCIATA COSTARICENSIS Ridgway

El Tigre, Rio Cupe, 1 ♂.

This bird is distinctly intermediate between *costaricensis* and *columbiana*, the black patch on the inner web of the outer rectrix being about halfway between the average of the two forms. In smaller size and slightly grayer coloring, the Cana bird, however, is nearer *costaricensis*, and must be referred here provisionally until a series is available. A specimen from Jesusito farther west, however, is nearer *columbiana*.

ERATOR ALBITORQUES ALBITORQUES Du Bus

Cana, 1 ♂, 1 ♀.

The few specimens in existence from eastern Panama agree with Colombian and Ecuador specimens of true *albitorques*. From the Canal Zone northward in Central America the numerous specimens examined are obviously darker gray, less white, especially below, and the name *fraseri* (Kaup) is available for this well-marked race.

PACHYRHAMPHUS POLYCHROPTERUS CINEREIVENTRIS (Sclater)

Cana, 2 ♂, 2 ♀.

PACHYRHAMPHUS CINNAMOMEUS Lawrence

Cana, 6 ♂, 6 ♀.

LIPAUGUS HOLERYTHRUS HOLERYTHRUS Sclater and Salvin

El Tigre, Rio Cupe, 1 ♀

LANIOCERA RUFESCENS (Sclater)

El Real, 1 ♀.

While a rare bird in Central America, this species is frequent in eastern Panama.

COTINGA NATTERERI (Boiss.)

El Tigre, Rio Cupe, 1 ♂.

Large series of this gorgeous bird are now in existence from eastern Panama and western Colombia. It is undoubtedly a common bird in heavy forest, but a feeding tree must be found.

QUERULA PURPURATA (P. L. S. Müller)

El Real, 2 ♂; Cana, 1 ♂.

STELGIDOPTERYX RUFICOLLIS UROPYGIALIS (Lawrence)

Cana, 3 ♂.

HELEODYTES ALBOBRUNNEUS HARTERTI Berlepsch

El Real, 1 ♂; Cana, 1 ♂, 1 ♀.

THRYOPHILUS LEUCOTIS GALBRAITHI (Lawrence)

El Real, 1 ♂.

THRYOPHILUS NIGRICAPILLUS SCHOTTI Baird

El Tigre, Rio Cupe, 3 ♂; Cana, 1 ♂, 1 ♀.

A common and striking Wren of the more humid forests of eastern Panama, with a marked preference for reed-beds on the banks of rivers.

PHEUGOPEDIUS SPADIX XERAMPELINUS, subsp. nov.

Cana, 4 ♂, 3 ♀.

Type.—No. 140,510, M.C.Z.; breeding male; Cana, eastern Panama; April 13, 1928; Rex R. Benson.

Characters.—Similar to typical *Pheugopedius spadix* Bangs of western Colombia, but a paler and less richly colored bird; upperparts, wings and chest rufous instead of rich chestnut; sides and flanks much less reddish brown, and belly paler and grayer.

Remarks.—This very distinct species of Wren is rare and little known in collections. Apparently there are only two specimens on record from Colombia, one of which, the type, is before me. Dr. Chapman has already recorded seven specimens from Tacarcuna, eastern Panama, and the present series from Cana endorses his belief that the species must be much rarer in Colombia than in eastern Panama, where it appears to inhabit primarily the lowest edge of the Subtropical Zone. Panama specimens are separable at a glance from the type.

PHEUGOPEDIUS FASCIATO-VENTRIS ALBIGULARIS (Lawrence)

Cana, 1 ♂.

TROGLODYTES MUSCULUS INQUIETUS Baird

Cana, 1 ♂.

HENICORHINA LEUCOSTICTA DARIENENSIS Hellmayr

Cana, 3 ♂, 3 ♀.

LEUCOLEPIS PHAEOCEPHALUS ASSIMILIS Todd

Cana, 1 ♀.

MYADESTES COLORATUS Nelson

Cana, 1 immature ♂ (?).

TURDUS OBSOLETUS COLOMBIANUS Hartert and Hellmayr

Cana, 1 ♂, 1 ♀.

Dr. Chapman (Distribution of Bird-life in Colombia, 1917, p. 536) has already shown the relationships of this form to the Central American

obsoletus. I am by no means sure, however, that adequate series of both Panama and Colombian specimens will not show the Panama bird to be separable. The two before me, however, are quite different, one being noticeably more chocolate brown than the other, thus approaching *obsoletus*.

VIREO FLAVOVIRIDIS FLAVOVIRIDIS Cassin

Cana 1 ♀.

COMPSOTHLYPIS PITIAYUMI NANA Griscom

Cana, 1 breeding ♀.

This Cana bird, the second known specimen, corroborates the characters assigned to the subspecies.

DENDROICA CASTANEA (Wilson)

El Tigre, Rio Cupe, 1 ♂, 1 ?; Cana, 1 ♂.

The Cana male was collected on April 6 and is in full breeding plumage.

OPORORNIS PHILADELPHIA (Wilson)

Cana, 2 ♂.

WILSONIA CANADENSIS (Linnaeus)

Cana, 1 ?.

SETOPHAGA RUTICILLA (Linnaeus)

Cana, 1 ♂.

BASILEUTERUS FULVICAUDA SEMICERVINUS Sclater

Cana, 2 ♂, 2 ♀.

SPOROPHILA SCHISTACEA SCHISTACEA (Lawrence)

Cana, 1 breeding ♂, 1 immature ♂.

A very rare and little known bird, recorded definitely only from the Canal Zone and northern Colombia.

SPOROPHILA AURITA AURITA (Bonaparte)

Cana, 3 ♂, 2 ♀.

VOLATINIA JACARINI ATRONITENS Todd

Cana, 2 ♂, 1 ♀.

PITYLUS GROSSUS (Linnaeus)

Cana, 1 ♂

SALTATOR MAXIMUS IUNGENS, subsp. nov.

Type.—No. 140,509, M.C.Z.; breeding ♂; Cana, eastern Panama; April 5, 1928; Rex R. Benson.

Characters.—Similar to typical *Saltator maximus* (P. L. S. Müller) of Colombia to Brazil, but connecting it with *Saltator intermedius* Lawrence of western Panama; intermediate in size; crissum yellower, less fulvous; differing from both allies in being a duller, less golden green on the upperparts.

Material Examined

Saltator maximus maximus.—Large series from Colombia to Brazil.

Saltator maximus iungens.—Cana, eastern Panama, 8 ♂, 4 ♀.

Saltator maximus intermedius.—Large series from southwest Costa Rica to the Canal Zone.

Remarks.—For many years in the literature, we found the well-known South American *Saltator maximus* compared with the Central American *S. magnoides*, a larger bird with black on the head, and a broad black breast band, separating the buff throat from the gray belly. Ridgway (Birds of North and Middle America, 1, pp. 663–666) showed in 1901 that as we proceed southward in Central America, *S. magnoides* gradually loses the black on the head and the breast band decreases in width and extent. In specimens of *S. magnoides intermedius* from the Canal Zone, the breast band is reduced to a few spots or *disappears entirely*, although others possess one. So far as I am aware these extreme specimens of *intermedius* have never been compared with *S. maximus*, and no grounds whatever for specific distinctness exist. The case is an interesting one, as in other species of the group Chapman has already brought out similar cases of variation. As a whole, *S. intermedius* differs from *S. maximus* in being a darker purer gray below with a darker and more fulvous crissum and averages slightly larger. No records exist of a *Saltator* of this group in eastern Panama, and the bird here described is exactly intermediate in the slight characters just given above. In addition it happens to be a slightly less yellow green above than both its neighbors. As *maximus* has many years priority, all the Central American forms become races of it. I can see no grounds for keeping *S. magnoides medianus* and *intermedius* specifically distinct as Carriker has urged (Birds of Costa Rica,

p. 876). The two forms are admittedly distinct and a series of perfectly connecting intermediates is not known, but from Colombia to Mexico we have a series of representative forms gradually passing in orderly geographic sequence from one extreme to the other, and this far more important fact is obscured by making specific distinctions on a more or less arbitrary and artificial criterion.

Wing Measurements of Eight Males

maximus, 91.5–98 (94.8)

iungens, 93–102 (98.1)

intermedius, 94–106 (100.7)

SALTATOR STRIATIPICTUS STRIATIPICTUS Lafresnaye

Cana, 4 breeding ♂.

Not previously recorded from Panama, but the Colombian form was to be expected, provided the species occurred at all in extreme eastern Darien. My four specimens are absolutely typical.

ARREMONOPS STRIATICEPS STRIATICEPS Lafresnaye

Cana, 1 ♂, 3 ♀, 1 juv. ♂.

ARREMON AURANTHIROSTRIS STRICTOCOLLARIS Todd

Cana, 5 ♂, 3 ♀.

For other records of this race from eastern Panama, c/o Chapman, Amer. Mus. Novitates, No. 160, 1925, p. 6. The present series shows great variation in the width of the breast band.

BUARREMON ATRICAPILLUS TACARCUNAE Chapman

Cana, 11 ♂, 1 ♀.

This fine series is apparently the second collection of this recently proposed form. Two of the males have a few white feathers in the auricular region.

COEREBA MEXICANA COLUMBIANA (Cabanis)

Cana, 1 ♂, 1 ♀, 1 ♂ imm.

These specimens are typical examples of *columbiana*, a race appearing almost specifically distinct from true *mexicana*, were it not for well-marked intermediates from further down the Tuyra basin. Not previously recorded from Panama.

CHLOROPHANES SPIZA ARGUTA Bangs and Barbour

Cana, 2 ♂, 3 ♀.

We have here the unusual case of a highly variable species, a subspecies of which ranges from Costa Rica to eastern Panama, ignoring the important faunal boundary of the Canal Zone as far as characters are concerned. These Cana specimens are absolutely indistinguishable from a Costa Rican series, and show no approach whatever to the blue *subtropicalis* of western Colombia.

TERSINA VIRIDIS OCCIDENTALIS (Sclater)

Cana, 2 ♂ ad., 5 ♂ imm., 2 ♀ ad.

The occurrence of this family in Central American territory has been generally overlooked, and goes back to an obscure statement by Oustalet in the *Biologia Centrali Americana*, 1, p. 246. On this page there is the description by Oustalet in French of the unique type of *Dacnis viguieri*. By way of comment he states that this bird was obtained "sur les bords du golfe de Darien" with many other species, of which he lists six by their scientific names in brackets, and one of these is "*Procnias occidentalis*." This vague record was entirely overlooked by the recipients of the letter, the authors of the *Biologia*, and it is not surprising that it has escaped attention since.

The series listed above does not differ even minutely from a larger series of *occidentalis* from Colombia, Ecuador, Peru and Trinidad. In comparing them, however, I was surprised to discover that a fine series from Santa Marta showed obvious color differences, constituting a separable form, which is named below.

TERSINA VIRIDIS GRIESENS, subsp. nov.

Type.—No. 106,300, M. C. Z.; ♀ ad.; La Concepcion, Santa Marta, Colombia; February 14, 1899; W. W. Brown.

Characters.—Adult male inseparable from *Tersina viridis occidentalis*, but females with the green a duller, paler and grayer shade throughout, not such a bright parrot or grass green, especially marked on the underparts, and obvious in comparable series; immature males with the green areas differing in the same respects as the female. Forty-four specimens examined.

Remarks.—Even with over one hundred specimens before me, I am at a loss to explain the plumages of the male *Tersina*, but two things

are apparent, based particularly on what I know to be the careful and competent sexing of Benson. In the first place the birds breeds when still in immature plumage, just like *Chlorophonia* and *Tanagra*. These partially immature breeding males are, however, quite different from two other males marked "immature" by Benson, which exactly resemble adult females, except that the barring of the abdomen is continued across the breast right up to the chin. Two females from eastern Ecuador are similar and it may be that this is a "first year" plumage, found in both sexes. The usual so-called immature male with patches of blue appearing in a hit or miss fashion may be a "second year" plumage, in which the bird unquestionably breeds. If so, we have here a case exactly analogous to *Tanagra*. In *Tersina* the majority of the "second year" males have the blue areas relatively dull, without the silky or satiny gloss so well known in the fully adult male, but apparently the gloss appears long before the green feathers are replaced by blue ones, as specimens that are less than half blue have begun to acquire this gloss. It may be coincidence, but it is suspicious that the three specimens before me having this gloss happen to be the breeding males from Panama. We know that this blue in *Tersina* disappears when the bird is wet, so that there must be some special feather structure, which apparently does not begin to develop until after a certain age has been reached. We have here an interesting problem for a microscopist with a sufficiently general knowledge of feather structure.

The great majority of the females examined have some scattered bluish feathers, or a bluish gloss somewhere. The females from Santa Marta average far more of this blue than my specimens of *occidentalis*, but this may be an accident, or it may be that some of them were wrongly sexed.

TANAGRA OLIVACEA HUMILIS (Cabanis)

Cana, 2 ♂.

TANAGRA FULVICRISSA FULVICRISSA (Sclater)

Cana, 1 ♀.

TANGARA GUTTATA EUSTICTA Todd

Cana, 3 ♂, 3 ♀.

It was most surprising to receive a series of this Subtropical Zone tanager from extreme eastern Panama, and find that they were inseparable from the Costa Rica race, and showed no approach whatever to the Colombian forms. In fact these Cana birds are extremes of the

eusticta type, being more heavily spotted above and below and with more yellow on the head than the majority of a large series of topotypes.

TANGARA INORNATA LANGUENS Bangs and Barbour

Cana, 4 ♂.

TANGARA LARVATA FANNY (Lafresnaye)

Cana, 1 ♂, 3 immature.

The Colombian race ranges into extreme eastern Panama at Cana and the upper Tuyra valley. The intermediate form *centralis* Berlepsch is entirely worthy of recognition and ranges from southern Nicaragua to the Canal Zone and east along the Pacific coast at least to the Chiman River.

TANGARA GYROLOIDES GYROLOIDES (Lafresnaye)

Cana, 3 ♂, 4 ♀.

It seems now to be generally agreed to apply this name to the form inhabiting central and western Colombia, characterized by a less developed nape-ring, and a smaller, duller yellow shoulder-patch. In Costa Rica and western Panama a race *bangsi* Hellmayr has a broader nape-ring and a well-developed golden shoulder-patch. These characters reappear in western Ecuador, and lack of good series from one region or the other has induced both Hellmayr and Chapman to call west Ecuador birds *bangsi*. As a matter of fact they are separable in series, the Ecuador birds being obviously paler blue below and a shade paler chestnut on the head, especially on the sides. Great care, however, must be used to secure comparable specimens, as females and immature males of this species are always paler blue than breeding adult males. These differences were long ago pointed out by Bangs (Proc. New England Zool. Club, 6, 1917, p. 76) who described the west Ecuador bird as *nupera* from Nanegal. Greatly increased material shows that it is a perfectly tenable form, which was apparently overlooked by Chapman, as it is not mentioned either in his discussion of this species or the synonymy in his Distribution of Bird-life in Ecuador.

A final point on the zone this species inhabits, as it is recorded from both the Tropical and Subtropical Zones. This bird *breeds* in the lower levels of the Subtropical Zone, in the mountains of western Panama, for instance, most abundantly at about the 3,500-foot level, where it is the commonest tree-top bird, and it does not range above 5,000 feet,

except where the original cloud forest has been destroyed to make coffee plantations, or some other special factor. In the non-breeding season it descends regularly to lower levels, and has even straggled to the Canal Zone, many miles from its nearest breeding mountains. At the moment I recall only two or three specimens captured there long years ago. One of these, in New York, is intermediate between *bangsi* and true *gyroloides*, but nearer the former. The other in Cambridge is much nearer *gyroloides*. The excellent series from Cana and another from Mt. Sapo are unquestionably *gyroloides*. There is no reason why both forms should not straggle to the Zone, and once the bird's life history is understood, the apparent contradiction is removed.

THRAUPIS CANA CANA (Swainson)

El Tigre, Rio Cupe, 1 ♂; Cana, 3 ♂, 2 ♀.

Birds from extreme eastern Panama are certainly referable to the typical form. From at least the Canal Zone westward Blue Tanagers are somewhat doubtfully referable to *diaconus*, a somewhat unsatisfactory race, the characters of which do not become definite until much further north in Central America.

THRAUPIS PALMARUM ATRIPENNIS Todd

El Real, 1 ♂; Cana, 5 ♂, 2 ♀.

RAMPHOCELUS ICTERONOTUS Bonaparte

El Real, 1 ♂; Cana, 3 ♂, 7 ♀.

RAMPHOCELUS DIMIDIATUS DIMIDIATUS Lafresnaye

Cana, 3 ♂, 5 ♀.

CHLOROTHRAUPIS OLIVACEA (Cassin)

Cana, 1 ♂, 1 ♀.

PHOENICOTHRAUPIS RUBICA VINACEA (Lawrence)

Cana, 3 ♂, 2 ♀.

It is most interesting to discover this race of western Panama and western Costa Rica reappearing in extreme eastern Panama without any apparent subspecific change. The one adult female is, however, a shade browner and less green than the majority from western Panama.

TACHYPHONUS RUFUS (Boddaert)

Cana, 1 ♂.

TACHYPHONUS LUCTUOSUS PANAMENSIS Todd

El Real, 1 ♂; El Tigre, Rio Cupe, 1 ♂; Cana, 3 ♂, 2 ♀.

CHLOROSPINGUS INORNATUS (Nelson)

Cana, 1 ♂ at 2,600 ft. on Mt. Pirri.

Apparently the second time this species has ever been collected. It was originally described as a new genus, *Hylospingus*, differing from *Chlorospingus* in being a larger bird with much stouter bill, and heavier tarsi. When compared with the type species of the genus, *C. ophthalmicus* and its close allies in Central America and the Andes, there is no doubt that these characters are well marked. There are other rare and little known species of *Chlorospingus*, however, which have the same characters as *inornatus*, or connect it with the type of the genus by gradual stages. Thus *C. zeledoni* is slightly aberrant, in greater degree so is *C. semifuscus*, next comes *C. hypophaeus* of Veraguas, and last *C. flaripectus* of Colombia, and our transition from *Chlorospingus* to *Hylospingus* is complete. While admittedly a matter of opinion is involved, such a genus seems to me to serve no useful purpose. To those, however, who prefer to recognize such average structural differences, *Hylospingus* to be logically tenable would have to include *hypophaeus* and *flaripectus*. The color resemblances between *hypophaeus* and *inornatus* are sufficiently marked to infer that they represent each other on the two sides of the Panama fault at the Canal Zone.

MITROSPINGUS CASSINI CASSINI (Lawrence)

Cana, 1 ♂, 2 ♀.

OSTINOPS DECUMANUS DECUMANUS (Pallas)

El Tigre, Rio Cupe, 1 ♂; Cana, 1 ♂, 1 ♀.

CACICUS VITELLINUS VITELLINUS (Lawrence)

El Tigre, Rio Cupe, 1 ♂; Cana, 1 ♂, 1 ♀.

AMBLYCERCUS HOLOSERICEUS HOLOSERICEUS (Lichtenstein)

Cana, 4 ♂, 1 ♀.

ICTERUS MESOMELAS SALVINI Cassin

El Tigre, Rio Cupe, 1 ♂; Cana, 1 ♂.

CYANOCORAX AFFINIS ZELEDONI Ridgway

El Tigre, Rio Cupe, 2 ♂; Cana, 2 ♂, 2 ♀.

Distinctly paler, less creamy on the underparts, showing an approach to typical *affinis* of Colombia.